Claims:

1. An electromechanical transducer for converting sound energy into an electric signal, or vice versa, which transducer includes a membrane (3), two electrodes (1, 2), the electric field between which can be controlled or measured, and a support structure (4, 5), on which the membrane (3) is arranged to vibrate, interacting with the electric field, and which support structure (4, 5) includes several support points (4, 5), which are positioned in such a way that several parallel vibrators are formed in the membrane (3), **characterized** in that the support structure (4, 5) is formed as a permanent part of the membrane (3).

2. A transducer according to Claim 1, **characterized** in that the support structures (4, 5) and the electrodes (1, 2) delimit cavities (8) for the parallel vibrators on both sides of the membrane (3), so that the membrane (3) can vibrate in both directions from its rest position.

3. A transducer according to Claim 2, **characterized** in that at least some of the cavities (8) are located essentially opposite to each other on both sides of the membrane (3), so that the transducer includes several vibrators, which are able to vibrate in two directions from the rest position of the membrane (3), in such a way that the vibrating surface area of the membrane (3) is essentially the same size and at the same point in the membrane (3), when the vibrator vibrates in the first direction and in the second direction.

4. A transducer according to Claim 2 or 3, **characterized** in that at least one opening or channel (7) is connected to each cavity (8), by means of which the internal space of the cavity (8) is in a pressure-equalization connection with the air space outside the transducer, or at least with some other cavity (8).

5. A transducer according to any of Claims 1 - 4, **characterized** in that at least one electrode (1) forms a fixed structure, to which the moving membrane (3) is fitted, so that the membrane and the electrode (1) are in contact with each other only through the support structures (4, 5).

6. A transducer according to any of Claims 1 - 5, **characterized** in that the membrane is a permanently charged electromechanical insulating membrane, the thickness of which remains essentially the same when the membrane vibrates.

7. A transducer according to any of Claims 1 - 6, **characterized** in that the support structure (4, 5), the membrane (3), and the first electrode (1) are permanently attached together to form one piece, for example, by gluing or welding, and this piece is set or pressed against the second electrode (2).

8. A transducer according to any of Claims 1 - 8, **characterized** in that one of the electrodes (1) is manufactured on the surface of the membrane (3).

9. A transducer according to any of Claims 1 - 8, **characterized** in that the membrane (3) includes a support structure (4, 5) only on one side of the membrane (3).

10. A transducer according to any of Claims 1 - 9, **characterized** in that the transducer is attached as part of the device case and that the first electrode (1) is manufactured on the surface of the membrane (3), and the second electrode (2) is manufactured on the surface of the device case.

11. A transducer according to any of Claims 1 - 10, **characterized** in that the membrane (3) is a permanently charged electromechanical insulating membrane.

12. A method for manufacturing an electromechanical transducer, which transducer includes a membrane (3), two electrodes (1, 2), the electric field between which can be controlled or measured, and a support structure (4, 5), on which the membrane (3) is arranged to vibrate, interacting with the electric field, in which method:

- the support structure (4, 5) is formed in such a way that it includes several support points (4, 5) at a distance from each other, and
- the membrane (3), the electrodes (1, 2), and the support structure (4, 5) are positioned in such a way that several parallel vibrators are formed in the membrane (3),

characterized in that

- a combination piece is manufactured, which includes the first electrode (1), the membrane (3), and the support structure (4, 5) of the membrane (3), and
- after the manufacture of the combination piece, the membrane (3) is charged with an electrical charge.

13. A method according to Claim 12, **characterized** in that the first electrode (1) is formed on the surface of the membrane (3).

14. A method according to Claim 12 or 13, **characterized** in that the membrane (3) is stretched to a pre-tension before the attachment of the membrane.

15. A method according to any of Claims 12 - 14, **characterized** in that the membrane (3) is an electromechanical insulating membrane (3), to which a permanent electrical charge is brought when the membrane is charged.

16. A method for manufacturing a membrane-electrode-pair for an electromechanical transducer, **characterized** by

- taking an electrode (1),
- taking a membrane (3),
- taking a support structure (4), which is either a separate support structure (4) or is permanently attached to the electrode (1) or the membrane (3),
- attaching the electrode (1), the membrane (3), and the support structure (4) to each other, in such a way that the membrane (3) is at least partly located at a distance from the electrode (1), and
- charging the attached membrane (3) with an electrical charge.

17. A method according to Claim 16, **characterized** in that the electrode (1), the membrane (3), and the support structure (4) are attached to each other, in such a way that the membrane (3) receives a specified pre-tension.

18. A method according to Claim 16 or 17, **characterized** in that the membrane (3) is an electromechanical insulating membrane (3), to which a permanent electrical charge is brought when charging the membrane.